

# **THE MINING INDUSTRY OF THE Khabarovsk Krai**

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## **SUMMARY**

The Khabarovsk Krai is rich in mineral resources. Four minerals (gold, platinum, tin, and coal) offer short/medium term opportunity for development and exploration. The territory is one of the largest suppliers of nonferrous metals, including seven tin ore bearing localities. Survey and development of the precious metal placers, deposits of tin, copper, coal, rare-earth metals, as well as exploration of oil and gas fields in the continental shelf, are major priorities of the Krai Government. Foreign businesses are regularly invited to participate in tenders on development of raw material deposits. The Krai's resource-based industries create opportunities for American equipment and machinery exporters as local managers renovate existing facilities and expand mining and production volumes.

End Summary.

## **ABOUT Khabarovsk Krai**

Khabarovsk Krai, occupying 4.6 percent of Russia's territory (304,500 sq. miles), has a very important and strategic location in the central part of the Russian Far East (RFE). Since April 2000, Khabarovsk is officially the capital of the Far Eastern Federal District. The Krai consists of 19 independent cities and districts, including its administrative center - Khabarovsk (579,200 people as of January 1, 2005).

During the past few years, the Krai has enjoyed stable economic growth. During 2004, its overall industrial output grew 0.3 percent, and exceeded 90.8 billion rubles (approximately \$3.2 billion). Krai's ferrous and non-ferrous metallurgy, food processing, timber and wood processing sectors enjoyed production growth during the year. Khabarovsk Krai major sectors of economy include: machine building and metal working - 28.5 percent of Krai's industrial output, power engineering - 15.2 percent, food industry - 14.0 percent, nonferrous metallurgy - 13.0 percent, timber and wood processing - 12.5 percent, ferrous metallurgy - 7.5 percent, fuel industry - 4.1 percent, industrial construction materials - 3.4 percent.

The Krai has two major railway systems, water transportation for up to half the year, and a highway network. Vanino, one of the largest Russian Far Eastern seaports can handle up to 12 million tons a year of cargo of all types. It is equipped to load bulk ores and coal. The Krai has a good airport in Khabarovsk that serves international flights.

## **MINING IN Khabarovsk - CHARACTERISTICS**

The Khabarovsk Krai is richly endowed with precious metals, base metals, gems and energy and fuel resources. The priority areas of development of the Krai's mining

industry is research and development of the main deposits of precious metals, tin, copper, coal, less-common rare-earth metals, exploration of prospective oil and gas areas on the mainland within the continental shelf.

The mineral deposits are provided for development through competitions and international tenders. During the 2005, the Krai plans to auction the right for geological survey and production within the Dubicanskaya oil and gas structure and Lazorevskiy oil and gas sector, exploration and production at the Adnikanskiy gas deposit and Algaminskoye zirconium deposit.

The mining industry in the Khabarovsk Krai has the following basic characteristics:

- The mineral and raw material resources are widely scattered across the Krai.
- Reserves for mining plants vary. The mining and enrichment industry often makes concentrates, not finished products.
- Virtually all forms of mining have a good raw-material base for future extraction. The raw material base can satisfy the Russian demand for tin, tungsten, and precious metals.

Today, the primary sources of investment in the precious metals mining industry are the own funds (reinvestment) and long-term loans of the gold-mining companies. During the past four years, Khabarovsk Krai mining companies invested nearly \$200 million in the industry development. The share of state investments in exploration of gold decreased greatly due to abolition of the fund for reproduction of the mineral reserves base. The share of state funds in geological survey fell from 77.5 percent in 1996 and 82.6 percent in 2001 to 11.3 percent in 2002 and 3.7 percent in 2003. To prevent the decline of the mining industry due to depletion of gold reserves and lack of state funding, the Krai designed a program for the development of the industry up to 2010. According to this program, by 2005 production of precious metals (gold and platinum) would total 25 tons and remain on this level during the subsequent years. The Program also envisions a complex of activities aimed at increasing effectiveness of current operations, putting into operation new production capacities for production of ore gold by 2006-2008, stabilizing production of stream gold and increasing production of non-ferrous metals three times. It also calls for the Krai government to take steps to create a favorable investment climate for financing of exploration activities and identification of new deposits of precious and non-ferrous metals.

The recent decision of the Russian Ministry of Natural Resources to exclude information about reserves of a number of large gold deposits from the state secret list is expected to



further increase investment attractiveness of the Russian gold mining industry in general and, therefore, will result in the overall increase of investment in exploration and construction of the processing capacities. At the same time, the decision signed in February 2005 by President Putin provides access to previously secret information about the volume of reserves, production and consumption of platinum and natural diamonds. This sensational news for the Russian market of precious stones and metals indicates its complete liberalization.

## BEST PROSPECTS FOR U.S. BUSINESSES

- Participation in international tenders on deposits development;
- Participation in construction of processing/enriching facilities;
- Marketing of the minerals produced in Khabarovsk to Pacific Rim countries;
- Sales of associated machinery and equipment;
- Sales of chemical ingredients;

### Gold

For decades, gold and platinum extracted in the Krai constituted 6-8 percent of Krai's total output. Some 14 percent of the gold reserves of the RFE are located in the Khabarovsk Krai. During the past four years, production of gold in the Krai grew by 9 tons. The growth is primarily attributed to the increase of production of gold ore. Its share in the overall production volume increased to 70 percent. The Krai's largest deposits include Tas-Yuryakh, Khakandzhinskoye and Mnogovershinnoye. Twenty-five enterprises are currently engaged in precious metals mining. The largest are Amur Goldmining Artel JSC, Mnogovershinnoye JSC and Okhotskaya Mining and Geological Company.



The intensive increase of gold mining in the Krai during the past years resulted in a depletion of available deposits. Experts claim that the current reserves will be exhausted during the next seven years. According to Genadiy Pecherevin, Khabarovsk Krai Minister of Natural Resources, this may result in a 25 percent production decrease by 2007. For example, Tas-Yuryakh has available reserves for two years of active operation. By 2008, a number of new deposits will begin production including Avlayakan and Kirankam in Ayano-Mayskiy District of the Krai, Albasino in Polina-Osiopenko District, Noni in the Verkhnebureinskiy District. Another preprospective deposit is Belaya Goraya in Nikolayaevskiy District. However, these small deposits will be able to produce no more than 4,000 tons of gold annually.

### Performance of Krai's Primary Gold-mining Companies during 2000-2004

Company	Primary Shareholder	Primary Deposit	Production (thousand. Ounc.)				
			2000	2001	2002	2003	2004
Mnogovershinnoye	Highland Gold (100%)	Mnogovershinnoye	102	155	178	194	195
Okhotskaya	Polimermetal	Khakandzha	0	0	0	8	90
Amur MGC		Stream gold	129	145	174	185	185

In late 2003, Okhotskaya Mining and Geological Company, an affiliate of Polimetal JSC, put into operation the mining complex at Khakandzhinskoye deposit investing over \$100 million. During the past year, the company mined 2.8 tons of gold and 47 tons of silver. At this time, the enterprise seeks to purchase additional equipment for the reconstruction of the crusher house of their gold processing facility to increase its daily processing capacity to 1,600 tons of ore. The overall cost of modernization exceeds \$6 million. As a result the mining complex will reach its projected capacity of 4 tons of gold and 80 tons of silver. Polimetal's investment program for the region amounts to nearly \$30 million, including \$5 million in development of the underground part of the Khakandzha and Dukat (Magadan) deposits. Another \$8 million is allocated for exploration activities including those at the Khakandzhinskoye deposit and the neighboring territories.

Mnogovershinnoye, one of the Khabarovsk Krai largest gold mining operations, was established in 1998 by the group of Moscow investors. In 1999, it produced its first 1,130 kilogram of gold. In May 2002, Mnogovershinnoye JSC became a part of the international company Highland Gold Mining Ltd. In December of the same year, its stock was successfully placed at the London's stock market. The company actively cooperates with the U.S. company Caterpillar through Amur Machinery and Services - its Khabarovsk dealer. At this time, Mnogovershinnoye employs eleven machinery units purchased from Amur Machinery including three new 38-ton dump trucks purchased during 2004.

Vostok Gold Mining Company is another large artel in the Krai. During its 33-year history, it produced a total of 32 tons of gold and 3 tons of platinum. In four years, it plans to increase production to three tons of gold annually. The company mines in Ayano-Mayskiy and Tuguro-Chumikanskiy districts. Although it currently develops both ore and stream gold mines. It intends to focus on the ore production. During the next two years the company will be constructing the ore processing and enrichment facility based on available ore gold reserves. After the complex is put into operation, annual gold production will increase to two tons. By 2008, Vostok plans to construct one more ore complex and produce 5 tons of gold per year.

Artel Amur produces 46 percent of the total value of the precious metals in the region and in 2003 was recognized as the fourth largest gold mining enterprise in Russia. The company includes two large ore mining and processing operations – Ryabinoviy and Tas-Yuryakh, which account for 95 percent of gold produced by Amur. In 1993, the company

developed the “Ore Gold” Program and conducted the major technical renovation of production for more effective development of ore deposits. Production of gold ore grew from 30 kilograms in 1994 to 5.7 tons in 2003. In 2004 the company produced over 6.7 tons of gold.

### **Silver**

Silver deposits in the Khabarovsk Krai are identified at 11 gold ore and complex tin ore deposits. Associated silver production does not exceed 8-12 tons. The primary deposits of this metal are concentrated at Khakandzhinskoye and Mnogovershinnoye gold and silver deposits. Currently three tinstone-sulfide type deposits are being developed (Festivalnoye, Pravourmiyskoye and Perevalnoye) as well as Mnogovershinnoye.

### **Platinum**

Platinum has been produced by Khabarovsk companies since 1990. The deposit Konder is the second largest platinum reserve in Russia. Artel Amur is developing these reserves, confirmed in 1989. Of particular value are the reserves in the upper part of the site, which has a high proportion of concentrated platinum as well as platinum nuggets. Prospectors from the Gold Mining artel “Amur” have found nuggets weighing 3.519 kg- the third largest ever found. The currently explored platinum deposits provide for 5-6 years of active mining activities.

### **Coal**

The commercial reserves of black and brown coal exceed 1 billion tons, and estimated resources of coking coal - 4 billion tons. Brown coal is predominantly located in Sredneamurskiy basin with the expected reserves of 7 billion tons. The Adnikanskaya deposit of carbonaceous raw materials was exposed within Verkhnebureinskaya depression. While oil and gas reserves of the Krai are estimated to be 500 million tons, coal is the primary energy source of the Krai. In 2004, the coal extraction volume remained on the same level as 2003 and totaled 2.536 million tons. The annual output of local coal mining enterprises is not sufficient to satisfy its demand. The Krai annually brings in up to 7 million tons of coal from the Eastern and Western Siberia, Zabaikaliye, Republic Sakha (Yakutiya) and China. Development of the own raw material fuel base and provision of the Krai remote areas with domestic fuel is one of priorities for the Krai's economic development.

### **Tin**

Khabarovsk Krai is one of the major suppliers of tin ore, with seven large tin ore areas. Tin ore mining and dressing is predominantly performed in Komsomolsk ore district. Tin ore is extracted in a combination with industrial concentrations of copper, silver, tungsten, bismuth, and indium. The share of tin extracted from the ore fluctuates between 20 and 90 percent; the complex utilization of basic and associated rare metals in these ores is low (20 to 40 percent). The primary enterprise engaged in tin mining is Vostokolovo Ltd., licensed to work on Pravourmiyskoye, Festivalnoye and Perevalnoye tin ore deposits.

## **Zirconium**

The Algaminskoye deposit of the baddeleyite-zirconium ores was identified and preliminarily evaluated in the north areas of the Khabarovsk Krai. The content of zirconium dioxide in the blocks calculated varies from 1 to 52 percent. Despite zirconium the concentrate has wolfram (> 1%), niobium (<2.5%) and hafnium (1.25%). In addition to Algaminskoy deposit over 30 perspective ore appearances were identified. In essence, the new zirconium province was identified in the Russian Far East requiring additional research.

## **Other Resources**

- Forecast reserves of complex ores in the Krai are approximately 100-130 billion tons.
- Beryllium is found in the Bureiski and Ingiliysky massifs.
- Large deposits of zirconium have been discovered in Ayano-Maiski district.
- Significant reserves of phosphorites are located in the Udsko-Shantarski ore area.
- Apatite ores are concentrated in the Dzhugdzhurski and Baladedski massifs where titanium, vanadium, iron and feldspar can be extracted as auxiliary products.
- Iron ores are concentrated in two districts: Dzugurski (6.6 billion tons) and Udsko-Selemdzinski area (1.6 million tons).
- Manganese ores are common in Udsko-Shantarski area (30 million tons).
- Chromite ores are found in the rocks of Konderskoye platinum deposit.
- Significant reserves of peat, and spropel are found in swamps and lakes, and a number of thermal and mineral springs are being utilized.
- Practically unlimited reserves of alunite ores, used to produce alumina, potassic fertilizers, sulfuric acid, coagulants for water purification, were found in the lower Amur basin.

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